







First record of *Holothele longipes* (L. Koch, 1875) (Araneae, Theraphosidae) from Ecuador

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Abstract. We present the first record of *Holothele longipes* (L. Koch, 1875) (Araneae, Theraphosidae) from the Republic of Ecuador, based on a male specimen collected near Puerto Misahuallí, province of Napo, in the north-eastern foothills of the Andes, upper River Napo basin. This new record extends the geographic range of *H. longipes* by approximately 554 km west of the nearest previously known locality, on the River Momón, department of Loreto, Peru. Our new record also represents the first time a species of the theraphosid subfamily Ischnocolinae has been found in Ecuador.

Keywords. Amazonia, distribution, Ischnocolinae, spider, tarantula

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Introduction

The genus *Holothele* Karsch, 1879 (Araneae, Theraphosidae, Ischnocolinae) currently includes five species of spiders distributed in the Caribbean—*Holothele culebrae* (Petrunkevitch, 1929); *H. denticulata* (Franganillo, 1930); *H. maddeni* (Esposito & Agnarsson in Bloom et al., 2014); *H. shoemakeri* (Petrunkevitch, 1926); and *H. sulfurensis* Maréchal, 2005—and one species in northern South America—*H. longipes* (L. Koch in Ausserer, 1875) (Guadanucci et al. 2017; Guadanucci 2020; Mori and Bertani 2020). Among the ischnocolines, *Holothele* differs in having a wider than long or trapezoidal labium with more than 30 cuspules (Guadanucci 2020). The systematics of Ischnocolinae are not resolved, and the Caribbean species of *Holothele* share characteristics with *H. longipes* and other genera of the subfamily (Guadanucci 2020).

Holothele longipes is reported from localities across northern South America, with published records from French Guiana, Suriname, Guyana, Trinidad and Tobago, Venezuela, Colombia, Panama, Peru, Brazil, and Bolivia, extending from near sea level in Colombia and Trinidad and Tobago to above 4500 m elevation in Bolivia (Guadanucci et al. 2017; Sherwood and Gabriel 2019; Guadanucci 2020). Populations currently identified as *H. longipes* show slight morphological variation in genitalia and more substantial variation in colour. Several authors have suggested that *H. longipes* might be a species complex (Guadanucci et al. 2017; Sherwood and Gabriel 2019; Guadanucci 2020). Herein, we present the first report of *H. longipes* from Ecuador.

Methods

Active searches and opportunistic collections were conducted day and night on trails at the Nemonte Nat-

ural Reserve, near Puerto Misahuallí, province of Napo, Ecuador. Collections obtained during this survey are under the permit of the Ministry of Environment, Water and Ecological Transition of Ecuador (no. MAAE-ARSFC-2022-2195). The specimen was euthanized with direct intra-cardiac delivery of potassium chloride (KCl), following protocols described by Bennie et al. (2012), preserved in 75% ethanol, and deposited at the Museo de Zoología, Universidad San Francisco de Quito, Ecuador (ZSFQ). The specimen was examined and measured under an Olympus SZX16 stereomicroscope with an Olympus DP73 digital camera. Most measurements were recorded with the micro-imaging software for Olympus cellSens Dimension v. 1.16. Total length was recorded with digital callipers to the nearest 0.01 mm and rounded to the nearest 0.1 mm. Chelicerae length is considered in total length. All measurements are presented in millimetres. Compound images were obtained by stacking a series of photographs taken at different depths using an Olympus DP73 digital camera and processed with the staking and editing tools of Adobe Photoshop v. 23.5. Information on species for comparative diagnoses was obtained from the literature (Rudloff 1997; Maréchal 2005; Guadanucci et al. 2017; Sherwood and Gabriel 2019; Guadanucci 2020).

Results

Holothele longipes (L. Koch in Ausserer, 1875)

Figures 1, 2

New record (Fig. 3). REPUBLIC OF ECUADOR – PROVINCE OF NAPO • Canton Tena, parish Puerto Misahuallí, Nemonte Natural Reserve, near Puerto Misahuallí; -00.9575° , -077.6430° ; 840 m alt.; 29.vii.2022; R. J. León-E., P. Peñaherrera-R., A. Guerrero-Campoverde leg.; hand collected; foothill evergreen forest on the northern Cordillera Oriental of the Andes; 1 ♂,

ZSFQ-i8269, preserved in 75% ethanol.

GBIF records (Fig. 3). REPUBLIC OF ECUADOR – PROVINCE OF ORELLANA • Canton La Joya de los Sachas, parish Pompeya, Napo River, Pompeya; -00.4427° , -076.6200° ; 250 m alt.; 01.v.1965; Luis Peña leg.; 1 juvenile, MCZ:IZ:75016 • Canton Francisco de Orellana, Coca; -00.450° , -076.983° ; 250 m alt.; 01.v.1965; unknown collector; 1 ♂, MCZ:IZ:75023.

We found specimen ZSFQ-i8269 active at 21h52 on top of a wood plank under a *Ficus* tree and near a ravine used as a waste dump in a disturbed area near old plantations and roads. The two specimens from Ecuador in GBIF (2022) are reported as *Holothele recta* Karsch, 1879, a synonym of *H. longipes* (sensu Guadanucci et al. 2017). Although we did not examine these specimens, J.P. Guadanucci, a specialist in this genus, identified them in 2007 but did not include them in Guadanucci et al. (2017). While the Nemonte Natural Reserve is on the eastern foothills of the Andes of Ecuador, Pompeya and Coca are in the Amazonian lowlands of Ecuador. Nowadays, Pompeya and Coca are localities highly impacted by anthropogenic activities related to oil and agricultural industries. However, those areas had little human intervention when the specimens were collected in 1965, at the beginning of the oil era in Ecuador (Burneo and Oleas 1996).

Identification. Morphological characteristics of the examined male specimen (ZSFQ-i8269) match the diagnosis proposed for *H. longipes* by Guadanucci et al. (2017), showing an elongate, thin bulb with a slightly curved embolus and absence of keels (Fig. 2) (keels present and embolus twisted and sinuous in all other *Holothele* species; Guadanucci 2020); tibial apophysis composed by two branches, retrolateral branch spine tapering to the apex and placed in the internal profile, prolateral branch with spine from the base (Fig. 2E) (retrolateral branch with two spines, retrolateral spine



Figure 1. *Holothele longipes* from the Nemonte Natural Reserve, near Puerto Misahuallí, province of Napo, Ecuador (ZSFQ-i8269); dorsolateral view.

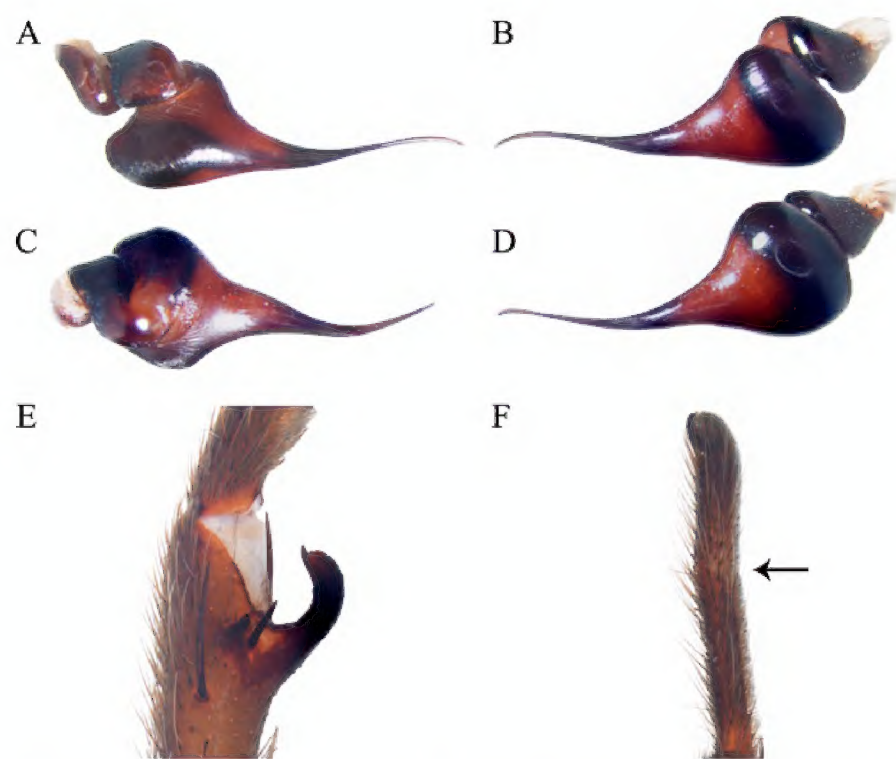


Figure 2. Male of *Holothele longipes* from Nemonte Natural Reserve, near Puerto Misahuallí, province of Napo, Ecuador (ZSFQ-i8269). **A–D.** Left palp bulb. **A.** Prolateral view. **B.** Retrolateral view. **C.** Dorsal view. **D.** Ventral view. **E.** Prolateral view of left tibial apophysis. **F.** Retrolateral view of tarsus IV, arrow points to cracked zone. Scale bars = 0.2 mm (A, B, C, D), 0.5 mm (E), 1 mm (F).

the shortest, and a third basal branch in *H. sulfurensis*; prolateral branch with spine placed in the external profile in *H. denticulata*).

Total length: 27.8 mm. Cephalothorax length: 10.66 mm, cephalothorax width: 9.46 mm; fovea recurved, chelicerae with 13 promarginal teeth, intercheliceral intumescence present. Sternum length: 4.65 mm, sternum

width: 4.29 mm, maxilla with 207–221 cuspules, labium trapezoidal with 119 cuspules; abdomen length: 10.51 mm, abdomen width: 5.30 mm. General podomere measurements (palp femur/patella/metatarsus/cymbium; leg femur/patella/tibia/metatarsus/tarsus): palp 5.95/3.50/5.78/1.65, leg I 10.98/5.38/9.93/8.76/6.68, leg II 10/4.48/8.92/8.44/5.78, leg III 8.97/4.63/7.97/9.80/5.05, leg IV 11.74/4.67/11.64/13.68/6.45; tarsus IV cracked (Fig. 2F). Colouration: chelicerae and cephalothorax heavily covered with long curvy orange setae; abdomen covered with short, black setae and long, erect, orange setae; legs and palps covered with black setae and heterogeneous patches of orange and bluish setae; femora darker than the other articles of the legs (Fig. 1).

Discussion

This report presents the first published record of *Holothele longipes* and its subfamily, Ischnocolinae, in Ecuador. Our new record extends the distributional range of this species by approximately 554 km west of the nearest previously known locality on the River Momón, Peru (Guadanucci et al. 2017). The species is now known to occur in 10 countries in northern South America. The GBIF specimens were collected by the Chilean entomologist Luis Peña during his expedition to the Amazonian lowlands of Ecuador (Acuña Mac-Lean 1965). Historical collections housed in international museums outside of Ecuador might have additional specimens that could help improve the understanding of the diversity of Ischnocolinae in Ecuador. Our new record

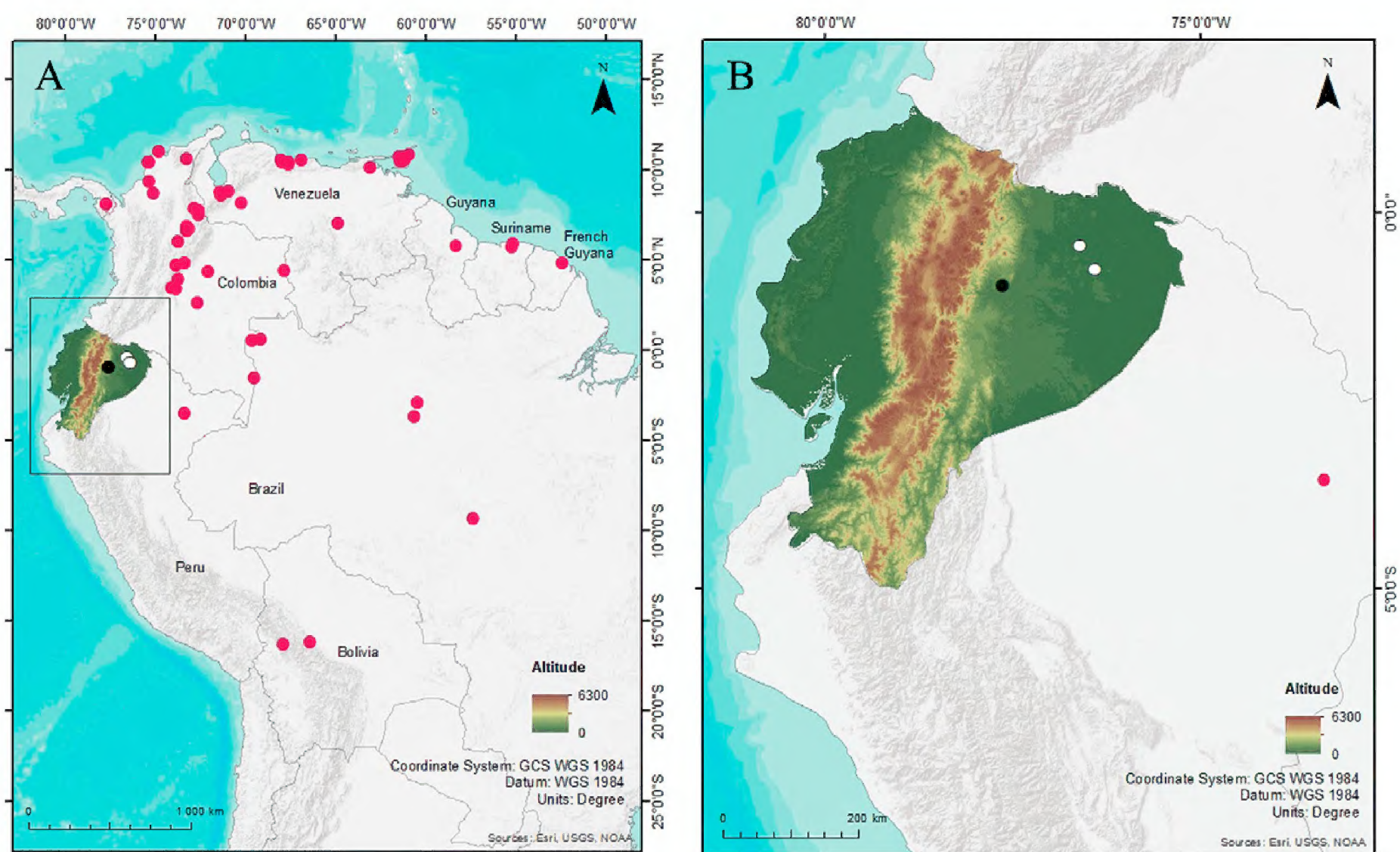


Figure 3. **A.** Map showing all known localities of *Holothele longipes* previously reported in the literature and the new localities in Ecuador. **B.** Map showing the new localities of *H. longipes* in Ecuador and the closest known locality in Peru (River Momón). Dark pink circles = localities reported in the literature (Guadanucci et al. 2017; Sherwood and Gabriel 2019); black circle = Nemonte Natural Reserve, province of Napo, Ecuador; white circles = GBIF localities of Coca and Pompeya.

of *H. longipes* is important because it shows that the species range includes Ecuador and western Amazonia, previously unknown due to sampling gaps. Spiders of Amazonian Ecuador remain little known, and species richness there is expected to be greater than currently known (Cisneros-Heredia and Carrazo-Montalvo 2016; Romo et al. 2017; Dupérré and Tapia 2020; Jordán et al. 2021).

We agree with Guadanucci et al. (2017), Sherwood and Gabriel (2019), and Guadanucci (2020) that *H. longipes* sensu Guadanucci et al. (2017) may be a complex with several cryptic species, thus explaining its widespread distribution across a broad altitudinal range. However, it is also possible that *H. longipes* is a highly adaptable species, inhabiting varied ecosystems and adapting reasonably well to anthropogenic habitats, as in our record and those presented by Guadanucci et al. (2017). To solve these questions, a taxonomic review of *H. longipes* and its synonyms is urgently required, integrating morphological, colouration, ecological, and molecular data from specimens of all known populations.

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Author Contributions

Conceptualization: DFCH, PPR. Data curation: PPR, RJLE, AGC. Formal analysis: AGC, DFCH, RJLE, PPR. Funding acquisition: DFCH. Investigation: AGC, DFCH, RJLE, PPR. Methodology: AGC, PPR, RJLE. Project administration: DFCH. Resources: RJLE, DFCH, PPR, AGC. Supervision: DFCH. Visualization: PPR. Writing – original draft: PPR, RJLE, AGC, DFCH. Writing – review and editing: AGC, RJLE, PPR, DFCH.

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